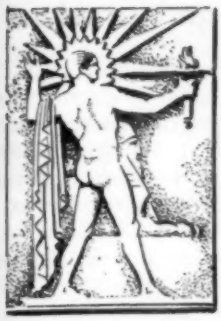
SCIENCE REVIEW OF YEAR

DEC 23 1928



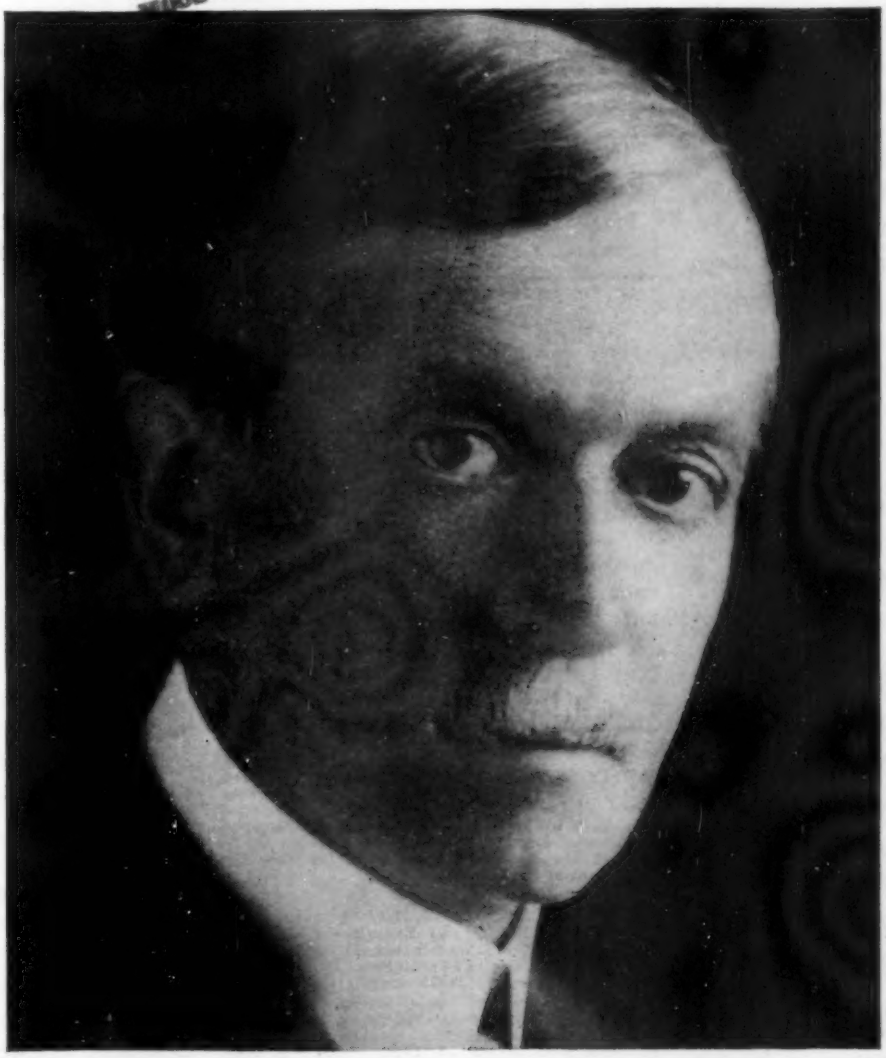
SCIENCE NEWS-LETTER

The Weekly Summary of Current Science

A SCIENCE SERVICE PUBLICATION

$5 a year 15c a copy Dec. 22, 1928

PERIODICAL ROOM GENERAL LIBRARY UNIV. OF MICH.



LEADER OF EIGHTEEN THOUSAND

A. A. Noyes, Retiring President of A. A. A. S.

(See page 380)

Vol. XIV No. 402

Attend Science Meeting by Radio

General Science

Though several thousand people interested in science will come from all parts of the country to attend the New York meeting of the American Association for the Advancement of Science, the stay-at-homes will still be able to hear some of the speakers by radio. In cooperation with SCIENCE SERVICE, the Association has arranged a series of radio talks by prominent scienitsts attending tne meeting. The National Broadcasting Company, the Columbia Broadcasting System, the Atlantic Broadcasting Corporation (WABC), the Paulist League (WLWL), Gimbel Brothers (WGBS) and the Experimenter Publishing Co. (WRNY), have all cooperated by giving the use of their broadcasting stations for one or more talks.

The following program has been arranged:

WEDNESDAY, DECEMBER 26

WRNY—10:30 p. m.—"The Coming Science Meeting"—Dean George B. Pegram, of Columbia Univ. & chairman local committee in charge of arrangements for meeting.

THURSDAY, DECEMBER 27

WRNY—11:00 a. m.—"American Wild Horses"—Dr. James W. Gildey, associate curator of paleontology, U. S. National Museum.

WLWL—6:10 p. m.—"Indian Life in the Northern Woods"—Rev. John M. Cooper, professor of anthropology, Catholic Univ. of America.

FRIDAY, DECEMBER 28

WGBS—4:45 p. m.—"American Indians"—Dr. Matthew W. Stirling, chief, Bureau of American Ethnology, U. S. National Museum.

WRNY—6:45 p. m.—"All Sorts of Stars"—Dr. Annie J. Cannon, Harvard College Observatory.

SATURDAY, DECEMBER 29

WJZ (and associated stations)—6:45 p. m.—"Lessons from the Past as Guides to the Future"—Dr. John C. Merriam, president, Carnegie Inst. of Washington.

WRNY—9:15 p. m.—"What Is Psychology?"—Dr. L. T. Troland, professor of psychology, Harvard University.

SUNDAY, DECEMBER 30

WGBS—4:45 p. m.—"What Science May Bring in 1929"—Watson Davis, managing editor, Science Service.

WRNY—6:15 p. m.—"From the Pipes of Pan to the Modern Flute"—Dr. Dayton C. Miller, professor of physics, Case School of Applied Science.

WOR (and Columbia Broadcasting System) 10:30 p. m.—"Plumbing the Depths of Space"—Dr. Seth B. Nicholson, astronomer, Mt. Wilson Observatory.

MONDAY, DECEMBER 31

WGBS—4:45 p. m.—"History in Trees"—Prof. A. E. Douglass, director, Steward Observatory, and professor of astronomy, University of Arizona.

WABC—6:30 p. m.—"Sugar from Wood"—Dr. Edwin E. Slosson, director, Science Service.

WRNY—7:30 p. m.—"Earthquakes of the Northeastern United States"—Comm. N. H. Heck, chief of division of terrestrial magnetism and seismology, U. S. Coast and Geodetic Survey.

TUESDAY, JANUARY 1

WRNY—7:45 p. m.—"Winter's Music"—Dr. W. J. Humphreys, professor of meteorological physics, U. S. Weather Bureau.

WEDNESDAY, JANUARY 2

WRNY—10:30 p. m.—"Whales" Dr. A. Brazier Howell, Johns Hopkins Univ.

Science News-Letter, December 22, 1928

In This Issue—

Come by Radio, p. 380—*Leader* of 18,000, p. 380—Science *Strides Forward*, p. 381—The *Grand Canyons* of New York, p. 385—*Getting Around*, p. 385—Citadels of Science, p. 386—*New Money* Nearly Crook-Proof, p. 387—*Carbon Monoxide*, p. 387—Industrial *Nerves*, p. 387—Osseous Calendar, p. 387—*Sugar-Saturated*, p. 391—Reindeer, p. 391—*Hypo* in Hollywood, p. 391—Mirror-Writers Not Freaks, p. 391.

SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Edited by Watson Davis.

Publication Office, 1918 Harford Ave., Baltimore, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C. Address all communications to Washington, D. C. Cable address: Scienserve, Washington.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trade-mark, U. S. Patent Office.

Subscription rate—$5.00 a year postpaid. 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science.

Advertising rates furnished on application.

Copyright, 1928, by Science Service, Inc. Republication of any portion of the SCIENCE NEWS-LETTER is strictly prohibited since it is distributed for personal, school, club or library use only. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service, details and samples of which will be gladly sent on request.

Chemist and Teacher

Chemistry

Chemical elements know him as master and thousands of chemists have prepared for chemical mastery under the guidance of Dr. Arthur A. Noyes, retiring president of the American Association for the Advancement of Science. When he delivers the principal address of the New York meeting of the A. A. A. S. on the "Story of the Elements" he will be recounting history which he has helped to make. In his present occupation of director of the Gates Chemical Laboratory of the California Institute of Technology at Pasadena and in his years of association with the Massachusetts Institute of Technology as instructor in the nineties and acting president some two decades later, he has exerted a deep influence over the theory and practice of chemistry,

Science News-Letter, December 22, 1928

INTERPRETING week by week, the latest developments in the various fields of science, this magazine attempts also to present its articles in the most pleasing and readable typography and the most convenient arrangement.

The *clippability*, *indexing*, and *automatic dating* of each article are unique features.

This is a *separable magazine*. Each original article can be clipped or torn out without losing or damaging another important article on the other side. These original articles are backed by reprinted quotations or excerpts, short one-sentence items, advertisements, and other material not likely to be clipped and preserved.

Each article is automatically *indexed* by the key word printed in italics just below the heading, or at the end of the article when the article has no heading. Articles can thus be filed easily into any system of classification, whether it be Library of Congress, Dewey, or one of the reader's own devising.

Each article is automatically *dated* by its last line.

All of the resources of Science Service, with its staff of scientific writers and correspondents in centers of research throughout the world, are utilized in the editing of this magazine.

Science Strides Forward in 1928

General Science

A new and larger looking-glass for the heavens, sight by radio and sound by film, elemental creation discovered in outer space and signaled to earth by cosmic rays, 5,000,000 volts of electricity, ancient civilization discovered and the center of our universe located, flying made safer by new airplane designs, artificial fevers attacking other diseases; these advances in science and many others occurred in the year 1928.

The progress of science is continuous, but each year some researches and discoveries culminate and come to general attention.

Some of the principal science achievements and events of 1928 were:

Aeronautics

The voyage of the Graf Zeppelin, with passengers and mail, from Friedrichshafen, Germany, to Lakehurst, N. J., established the practical value of trans-Atlantic transportation lines.

The airplane Southern Cross, piloted by Capt. Charles Kingsford-Smith and Capt. C. T. Ulm, with Lt. Com. Harry W. Lyon as navigator and James Warner as radio operator, flew from Oakland, Cal., to Sydney, Australia, a total distance of 7,800 miles, in approximately 88½ hours flying time.

A trans-continental non-stop flight was made in 18 hours and 58 minutes.

Charles B. D. Collyer and John Henry Mears completed a trip around the world by airplane and steamer in the record time of 23 days, 15 hours and 8 seconds.

Capt. Arturo Ferrarin and Maj. Carlo del Prete, flying a Savoia-Marchetti S-64, established a world's airline distance record of 4,466 miles in a flight from Rome to Brazil.

Capt. Dieudonné Costes and Lt. Com. Joseph le Brix, French aviators, completed on April 14, 1928, a 35,000-mile trip around the world begun October 14, 1927, flying their Breguet XIX biplane the entire distance except for the trip across the Pacific Ocean.

Capt. Arturo Ferrarin and Maj. Carlo del Prete gained the world's closed circuit distance record of 4,763.7 miles.

Johann Risztics and Wilhelm Zimmerman, flying a Junkers W-33 established a world's duration record of 65 hours and 25 minutes.

Adj. Louis Crooy and Sgt. Victor Gronen, flying a DH-9, established a world's duration record of 60 hours and 7 minutes, refueling in flight and returning to point of departure.

Eddie Stinson and George Haldeman, flying a Stinson-Detroiter, established a world's endurance record of 53 hours, 36 minutes, 30 seconds.

Major Arturo Ferrarin and Major Carlo del Prete, flying a Savoia-Marchetti plane established a world's duration record of 58½ hours.

Harry J. Brooks, flying a Ford monoplane, established a world's airline distance record of 972 miles for light airplanes weighing 440-771 pounds.

M. Maurice Finat, flying a Caudron C 109, established a duration record of 24 hours and 36 minutes for light airplanes.

Major de Bernardi, flying a Macchi 52 seaplane, established a world's speed record of 318.62 m.p.h.

Peter Hesselbach remained aloft in his glider, Darmstadt, for 4 hours and 5 minutes, thus establishing an American glider record.

Juan de la Cierva flew his autogiro from London to Paris.

The rigid airship U. S. S. Los Angeles was successfully landed on the deck of the airplane carrier U. S. Saratoga.

The airship Itália, under the command of Gen. Umberto Nobile, was wrecked after successfully crossing the North Pole; Lieut. Lundborg of Sweden rescued Gen. Nobile from the ice floe where members of the Italia crew were stranded.

Roald Amundsen, arctic explorer, who set out in search of survivors of the wrecked airship Italia, was lost.

Eventual propulsion of aircraft by motors operating on heavy oil fuel and self-igniting on the Diesel principle was forecast by experiments with new type engines by the Junkers aircraft concern.

A "foolproof" airplane, designed by Albert A. Merrill of the California Institute of Technology and constructed by him in association with Dr. A. L. Klein and Dr. Clark Millikan, was demonstrated in Los Angeles.

A new altitude meter for airplanes was developed by Dr. E. F. W. Alexanderson of the General Electric Co.

By simply enclosing the ordinary air-cooled engine in cowling to reduce wind resistance, airplane speed can be increased about 10 miles per hour, experiments by the National Advisory Committee for Aeronautics showed.

An automatic slotted wing device was invented in England by Handley Page to safeguard airplanes against stalling, nose-dives and tail-spins.

By a new process of electric welding, a new hollow-bladed propeller, made of special steel, was produced and put into use in navy airplanes.

Nine different types of aeroplane engines were approved as airworthy by the Department of Commerce during the year.

A device allowing an airplane to pick up a small consignment, such as a mail bag, from the ground while in flight was invented.

A device that stimulates actual flying conditions and produces for the novice aviator the psychological effect of an airplane in motion was developed at the Wright Field Experimental Flying Station by Lieut. Albert I. Hegenberger.

Contracts to build for the U. S. Navy two airplanes, the ZRS-4 and the ZRS-5, each with almost twice the capacity of the German Graf Zeppelin, were signed by the Goodyear Zeppelin Corporation.

A widespread investigation of the lightning hazard to aviators was announced by the Daniel Guggenheim Fund for the Promotion of Aeronautics in conjunction with government air services.

A corporation called Transcontinental Air Transport was formed by leading railroads, airplane operators and builders for the purpose of creating joint air-rail services.

In military aviation, the accident rate for accidents due to engine trouble was reduced to one-third of the prevailing rate for the two previous years.

Air mail was more generally used as a result of lower postage.

Anthropology and Archæology

The joint archæological expedition of the University of Pennsylvania and the British Museum uncovered at Ur, in Mesopotamia, a great royal tomb containing vast treasures and the bones of the wives and servants of the monarch, who were slain at his funeral.

Discovery of a tomb at Ophel, which may be the site of the tombs of the Kings of Judah, was announced by J. W. Crowfoot, director of the Palestine Exploration Fund.

Ruins of a great city of the ancient Hittites, with walls 13 feet thick, were surveyed by a party of the Oriental Institute of the University of Chicago.

Inscriptions from the desert of Sinai, the oldest known specimens of the Phoenician alphabet, were deciphered by Professor Romain Butin of the Catholic University of America.

The Field Museum-Oxford University Joint Expedition to Mesopotamia discovered at Kish in Mesopotamia a large temple deeply buried and dating back to the oldest Sumerian kingdom, before 3500 B. C.

Excavations made at Tell Beit Mirsim, the site of the Biblical Kiriath-Sepher, by the American School at Jerusalem and the Xenia Theological Seminary, St. Louis, revealed four strata of occupation from about 2000 B. C. to the time of the Babylonian exile and shed new light on the lives and customs of the Israelites.

Excavations at Beisan, by the expedition to Palestine of the University of Pennsylvania Museum, revealed a Canaanite fort-tower, a fragment of hieratic writing, the first discovered at Beisan, and other ruins and relics dating from 1500 B. C. to about 1200 B. C.

Prof. J. H. Breasted of the University of Chicago completed the translation into English of the oldest known scientific book, an Egyptian medical papyrus dating back to 1700 B. C.

Translation of the "Mathematical Papyrus" in Russia, which has long baffled Egyptologists, revealed that the Egyptians knew Euclid's mathematical methods fifteen centuries before the Greek scientist organized the subject.

Ten statues of women with funerary equipment, but robbed in ancient times of their jewels, belonging to the cemetery of the Cheops family, were found by Prof. Reisner of Harvard near the Egyptian Sphynx.

The ancient Egyptians frequently treated their dead roughly, as by breaking bones to make the bodies fit in small coffins, Miss Ann R. Bolan, of the Field Museum at Chicago, found by X-ray studies of mummies.

Excavations at Mohenjo-daro, in the Punjab of India, by Sir John Marshall, revealed traces of a prehistoric culture similar to that stretching from the Adriatic to Japan and dating from 3300 B. C. to 2700 B. C.

The Swedish expedition to Greece found three rock-cut tombs near Mycenae, containing funeral offer- (*Turn to next page*)

Science Strides Forward in 1928—*Continued*

ings dating back to the fourteenth century B. C. and many fine bronzes.

A fragment of a thick skull found at Nemea in Greece in a house dating about 2000 B. C. represents the oldest skeletal remains that have ever been found in Greece.

Ruins of Butrinto, scene of incidents in Virgil's Aeneid, were dug into by the Italian Archæological Mission to Albania, and remains of successive civilizations that occupied the site were discovered.

The excavation of the Circus Maximus at Rome, a task which may take ten years, was started.

The Wallraf-Richarz Museum of Cologne, excavating along the lower Rhine, came upon many relics of ancient Roman and Frankish occupation.

That trepanning of skulls and other major operations were performed in Sweden 5,000 years ago was shown by excavations at Gothland, by Dr. Gustaf Nihlen, of Stockholm.

Reconstruction of a prehistoric village in Scotland, under the direction of Prof. V. Gordon Childe, revealed evidence of gruesome human sacrifices and an inscription in an unknown alphabet.

An arrow point, found in an undisturbed Pleistocene deposit under a golf links in Florida by Dr. J. W. Gidley, of the U. S. National Museum, indicates that man lived in America at least 50,000 years ago, he reported.

The peak of America's native population, in prehistoric times, was reached about 1200 A. D., when there were probably 50,000,000 or even more Indians in the new world, was the conclusion announced by Dr. H. J. Spinden, of Harvard University, following a study of factors influencing population trends.

A survey of burial and ceremonial mounds built by early Indian inhabitants in Indiana was undertaken by the Indiana Historical Society and Historical Bureau.

Indian earthworks in Illinois, investigated by George Langford, of Joliet gave new details of the daily life of the prehistoric mound builders.

Excavation of an Indian mound at Joliet, Illinois, under the direction of Dr. Fay-Cooper Cole of the University og Chicago and W. M. Krogman, in charge of field work, yielded 100 skeletons all pronounced prehistoric, and various weapons and implements.

Ruins of an Indian village in Colorado destroyed by fire more than 2,000 years ago were excavated by Dr. Frank H. H. Roberts, Jr., of the Smithsonian Institution, and evidence was revealed that the Basket Maker Indians were not wiped out of existence suddenly but merged their identity with the Pueblos who succeeded them.

Remains of the highest stage of culture attained by Eskimos in Alaska were unearthed by Henry B. Collins, Jr., of the Smithsonian, at St. Lawrence Island, and were pronounced at least 300 years old.

Excavation and repair of the Temple of the Warriors, Chichen Itzá, Yucatan, was completed, and a beautiful turquoise plaque buried beneath the altar was discovered by Earl Morris, of the Carnegie Institution of Washington, in the course of the excavations.

A stucco-covered pyramid which is probably pre-Mayan was discovered and excavated at Uaxactun, Guatemala.

Remains of what may be the oldest Christian church in America were discovered in the Mexican state of Tlaxcala.

One of the lost books of Bernadino de Sahagun, containing priceless records of ancient Mexico, was discovered in the Vatican library.

Maya heiroglyphs carved on a slab over 1200 years ago, giving the exact Mayan date of the spring equinox, afforded a new check on Mayan dates, the translation being by Enrique Juan Palacios, of the Mexican Ministry of Education.

An earthquake in Mexico shook open an ancient tomb and revealed its hidden treasures to archæologists.

Astronomy

Plans to construct the world's largest telescope, with a concave mirror 200 inches in diameter, were announced by the California Institute of Technology, in cooperation with the Mt. Wilson Observatory.

The Bureau of Standards constructed, by a new method, the disc for a huge telescope mirror of optical glass almost a foot thick, nearly six feet in diameter and almost two tons in weight, to be used in the first all-American-made telescope for Ohio Wesleyan University.

The year's first comet was discovered on Washington's birthday by a German astronomer, Dr. K. Reinmuth, of Heidelburg.

The year's second comet was discovered on St. Patrick's day by a Frenchman, M. Giacobini, of the Paris Observatory.

The third comet of the year was discovered by David L. Forbes, an astronomer at Capetown, Africa, on November 21, when it was observed in the constellation of Corvus, the crow.

The nucleus of our galaxy of stars was located by Dr. Harlow Shapley, of the Harvard College Observatory, who announced that it is about 47,000 light years away from the earth and extends for about fifty degrees along the Milky Way in the constellations of Sobieski's Shield, Ophiuchus, Sagittarius, Scorpion, the Southern Crown, the Altar, the Rule, and the Centaur.

The presence of free oxygen in the atmosphere of Mars is best evidence for the existence of life there, Prof. H. N. Russell of Princeton declared.

Nova pictoris, the "new" star which flashed out in May, 1925, continued to behave in a very different manner from usual novae, leading astronomers to the view that it might be due to an actual collision of two stars.

The Carnegie Institution of Washington has published the "San Luis Catalogue of 15,333 Stars," marking the completion of the first division in its general catalogue of all stars out to the seventh magnitude.

Evidence was brought forward at the Royal Observatory of Rome that our sun is a pulsating or variable star.

By using plates sensitive to infra-red light, a German astronomer, Dr. G. Blunck, succeeded in photographing the sun's corona, a feat hitherto possible only during a total eclipse.

The earth's rate of rotation changes slightly every day, Dr. Benjamin Boss, of the Dudley Observatory, Albany, New York, announced.

Further confirmation of the Einstein theory was announced, as the result of measurements made on photographs taken during the total solar eclipse of 1926.

The presence of a hitherto undiscovered planet, tentatively called "planet O," was announced by Prof. W. H. Pickering, of Mandeville, Jamaica, from a study of its supposed perturbations on known planets, but observations with the biggest telescopes failed to confirm it.

Strange bands in the spectra of the light of certain stars may indicate that they are surrounded by meteors and comets, like the solar system, which may serve as fuel to keep the stars going, Dr. Harlow Shapley, of the Harvard College Observatory, declared.

Max Adler, Chicago philanthropist, gave that city a planetarium which will show the stars as seen from any part of the world at any time and the first to be given any city in the United States, though it will not be completed for a year or more.

On photographs made at the Lowell Observatory, Flagstaff, Arizona, of the spectrum of the Northern Lights on July 7 a very prominent line in the red region of the spectrum appeared for the first time, thus opening up a new scientific mystery, reported Dr. V. M. Slipher, director of the observatory, who recorded the phenomenon.

Moving pictures of the planet Jupiter, the first pictures of the kind ever made, were produced by Prof. W. H. Wright, of the Lick Observatory, and Dr. C. E. K. Mees, of the research laboratory of the Eastman Kodak Co.

A prize of 5,000 francs was offered in France for the best paper on a means for reaching another planet; the new projected mode of travel is called "astronautics."

Biology

A moving picture record of the living rabbit's egg which discloses many new phenomena, hitherto unknown, was obtained by Dr. W. H. Lewis and Dr. P. W. Gregory.

The parathyroid gland plays a large part in the control of sex of unborn offspring, Dr. Simon B. Chandler, of the Loyola University School of Medicine, Chicago, found.

A new vitamin, needed by young trout for normal growth, was discovered in raw liver by a group of biologists at Cornell University, and received the provisional name "Factor H."

Insects neither male nor female but containing characteristics of both sexes were produced in X-ray experiments by Prof. James W. Mavor, of Union College, Schenectady, working in a London laboratory.

Successful crossbreeding of Alaskan reindeer with native caribou and the production of fawns of materially increased weight, was accomplished by the U. S. Biological Survey.

A case of a mare mule which not only bore two healthy colts but had a grandchild was reported by A. H. Groth of Texas A. and M. College.

Canada undertook a census of the animals remaining in her musk-ox herds.

The attempt of the Soviet Government to save from extinction the wisent, Europe's representative of the bison family, failed, since careful searches of the 1,100 square-mile reserve made by naturalists showed no trace of a single living animal.

The first milk a cow produces after giving birth to her calf should be fed to the calf because it contains substances that ward off diseases, Dr. Theobald Smith, noted bacteriologist, reported.

The Carnegie Institution of Washington has completed an eugenical study concluding that laws for deportation of public charges becoming such from hereditary defectiveness should be extended and enforced.

Tuberculosis in live- (*Turn to next page*)

Science Strides Forward in 1928—*Continued*

stock has declined, due to the cooperation of the Bureau of Animal Industry with local authorities; 11,300,000 cattle were tested during the past year.

The work of eradicating cattle ticks from Southern states gradually reclaimed more territory from the pest.

A hybrid of the radish and cabbage was produced by Dr. Georgii D. Karpenchenko of the Botanical Institute at Detskoje Selo, in Russia.

Each species of tree has a definite pattern according to which sap and gases within its trunk are localized, and the gas body within each tree is continuous, studies by Dr. D. T. MacDougal of the Desert Laboratory, Tucson, Arizona, disclosed.

Zinc and boron are needed by plants, Miss A. L. Sommer and Prof. C. B. Lipman found at the University of California.

Borax, in a concentration of one and one-half parts to a thousand of water, was discovered by Prof. Robert Matheson and E. H. Hinman of Cornell University to be a poison for mosquito larvae.

Experiments with enormous cages, constructed of copper wire screening under the supervision of Dr. W. H. Larrimer on a farm maintained by the U. S. Bureau of Entomology near Toledo, Ohio, indicated that while it will be impossible to eradicate the corn borer, it can be controlled sufficiently to reduce commercial losses to a negligible amount.

A comparatively new bacterial disease known as "halo spot" destroyed large acreages of beans in the regions of Montana, Wyoming, and Colorado.

The $1000 annual prize of the American Association for the Advancement of Science, for outstanding research during the preceding year, was awarded to Prof. H. J. Muller of the University of Texas, for his work on producing new varieties of fruit flies by X-ray treatment.

Scientists the world over celebrated the 80th birthday of Hugo de Vries, foremost student of evolution since Darwin's time.

Chemistry

Gluconic acid, a chemical hitherto obtainable only at a price of $100 a pound, was produced at 35 cents a pound by chemists at the Color Laboratory of the U. S. Department of Agriculture, using a species of mould growing on a glucose solution.

Edible fats and fatty acids for soap making were made from paraffin through catalytic methods developed by the chemists of the German Dye Trust.

A magnetic theory of catalytic action in which molecules and atoms are conceived as having two poles like a bar magnet was advanced by Dr. Karl Krauch, German chemist.

Wall board is being manufactured from corn stalks in a special semi-commercial plant set up at Ames, Iowa by the U. S. Bureau of Standards in cooperation with Iowa State College.

A commercial plant for making paper out of cornstalks was built in Illinois, the first of its kind.

The process for converting wood waste into an edible carbohydrate suitable for hog food devised by Dr. Freidrich Bergius, German chemist, was improved to the point of semi-commercial production.

The U. S. Bureau of Chemistry and Soils has evolved two methods of making from corncobs insulating briquettes to be used as a substitute for cork, especially in small refrigerating units.

A successful substitute fabric has been developed to replace goldbeater's skin in the making of gas cells for airships, and several months' use in the "Los Angeles" shows the new material to be cheaper and fully as good.

Anthraquinone, a basic raw material in the manufacture of dyes, was made by cheaper methods involving the use of catalysts or solution in furfural as a result of research by Dr. A. O. Jaeger of Pittsburgh.

New methods of making artificial rubber were announced in Germany, though the process was not divulged.

A new explosive, known as "radium atomite" and claimed to be superior to T. N. T. or dynamite, was demonstrated to army engineers by Capt. H. R. Zimmer, of Los Angeles.

Synthetic sugar, from fructose and glucose, was made by two Swiss chemists, Prof. Ame Pictet and Hans Vogel.

"Bios," a vitamin that promotes the growth of yeast, was obtained in pure crystalline form by Dr. W. Lash Miller of the University of Toronto.

Experiments by dairy experts of the U. S. Department of Agriculture demonstrated that milk exposed to sunlight develops undesirable flavors and odors, whereas milk kept in the dark does not.

"Sunshine pills," consisting of synthetic Vitamin D, made by exposing ergosterol from yeast to ultra-violet rays, were placed on sale in Germany and England as a substitute for cod-liver oil.

An ultra-violet irradiated food was placed on the market, a commercial application of the discovery that ordinary foods exposed to ultra-violet rays promote the formation of healthy bones and teeth in children and young animals.

A new way to preserve ether for as long as eight months without spoiling or deteriorating was devised by S. Palkin and H. R. Watkins.

A new system of chemical shorthand was developed by Louis A. Leslie of New York and Dr. C. A. Jacobson, professor of chemistry at West Virginia University.

The 1928 Nobel prize for chemistry was awarded to Dr. Adolf Windaus of Goettingen, Germany, for his part in experiments proving that ultra-violet light, either in sunlight or artificially produced, will activate ergosterol and confer on it antirachitic properties.

The Nobel prize award for chemistry, 1927, went to Prof. Heinrich Wieland, of Munich, Germany, in recognition of experiments on the complex compounds known as the bile acids.

Engineering

A method of utilizing for power the difference in temperature between the depths and surface of tropical seas was devised and successfully demonstrated by Georges Claude, the French physicist and inventor.

Busses carrying 26 passengers, with sleeping accommodations, dining and toilet facilities were placed in operation.

A new stereoscopic apparatus for making contour maps from overlapping photographs was purchased by the government and is expected to revolutionize topographic mapping in mountainous countries.

The Army Air Corps photographed areas in the United States approximating 35,000 square miles for the War Department and other governmental bureaus.

Radio acoustic sound ranging, making possible the locating of ships even in darkness and fog, was developed.

A new world's speed record for automobiles was made at Daytona Beach, Fla., by Capt. Malcolm Campbell, an Englishman, who was later killed when his car overturned.

Diesel type engines light enough for automobile and airplane use approached the point of commercial practicability.

Two condemned buildings in Washington were burned to the ground by scientists of the Bureau of Standards in order to test fireproof safes under actual conflagration conditions.

A gearless auto that changes speed automatically was described to the Society of Automotive Engineers by a French engineer, D. Sensaud de Lavaud.

An instrument defined as a "breathing device" which experts believe will save the lives of men submerged in sunken submarines has been devised by Lieut. C. B. Momsen, Chief Gunner C. L. Tibbals, both diving experts, and F. M. Hobson, engineer in the Naval Bureau of Construction and Repairs.

Pulverized coal was applied to the propulsion of sea-going vessels, the initial installation being the U. S. Shipping Board vessel Mercer.

Radio equipment for communication between the front and rear ends of long freight trains has been installed by the Baltimore and Ohio Railroad for demonstration on that system.

The St. Francis dam, which impounded a large part of the water supply of Los Angeles, burst on March 12, causing a destructive flood.

Deposits of potash large enough to be of economic importance were discovered at two localities in Texas and one locality in New Mexico.

Geology and Geography

A blow to theories of land in the Arctic was dealt by the flight of Wilkins and Eieleson over the unknown polar region which no land was sighted.

Four ships carried the Byrd Antarctic expedition far south to the Bay of Whales, from which base attempts will be made by aeroplane to explore the Antarctic region.

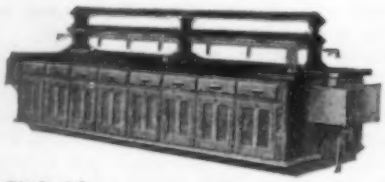
Polar explorations in the dirigible "Graf Zeppelin" which successfully made a round trip from Germany to the United States, were announced by a German organization known as Aeroarctic.

An expedition to study the birthplace of the icebergs, between Greenland and Baffin Land, was sent out by the U. S. Coast Guard on the U. S. S. Marion under command of Lieut. Comm. Edward H. Smith.

The non-magnetic yacht Carnegie, of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, set out on a three year cruise to all parts of the world to make new observations of electrical and magnetic conditions as well as other scientific researches, under the command of Capt. J. P. Ault.

A new volcano was discovered in eastern Ecuador by Joseph H. Sinclair, leader of an expedition sent out by the American Geographical Society.

The Mayon volcano, after being quiet for 28 years, became (*Turn to page* 389)



Students' Chemistry Desk No. 862

A favorite in many laboratories. Accommodates 16 students, working in sections of 8.

Kewaunee

Laboratory Furniture for the Teaching of Science

Superintendents and Science Instructors generally are familiar with the reputation of Kewaunee Laboratory Furniture for all science purposes. This Company is the largest manufacturer of science laboratory furniture in North America. Our factories are specially equipped to handle this kind of work. We have equipped several thousand universities, colleges, high schools, normal schools, vocational schools, hospitals, medical colleges, private and industrial laboratories.

We co-operate with the School Executives to help make the school a credit to the community.

Blue prints, showing location of floor connections, will be sent on request. We will make drawings without charge, upon receipt of specifications.

Write for information. Address all inquiries to the factory at Kewaunee.

Kewaunee Mfg. Co.
LABORATORY FURNITURE EXPERTS

C. G. Campbell, Pres. and Gen. Mgr.
206 Lincoln St., Kewaunee, Wis.

Chicago Office: 25 E. Jackson Blvd. Room 1311
New York Office: 70 Fifth Avenue

Offices in Principal Cities

Leica Negatives Can Be Enlarged to 12x18 inches

Leica

"THE UNIVERSAL CAMERA"

Fits The Hand

Fits The Pocket

ASSURES A MERRY CHRISTMAS

and Continued Pleasure Throughout the Year!

If you wish to please a Leica owner, consult the following shopping list; then see your dealer at once to insure that you will not be disappointed by delayed delivery

SHOPPING LIST

Range Finder for Movie Makers	$17.50	Panorama Head for Tripod	$6.00
"Fodis" Range Finder with case	10.00	Simple Direct Exposuremeter	1.50
Soft Leather Bag for "Leica"	4.00	"Reelo" Developing Tank	15.00
Chamois Bag for "Leica"	5.00	Reproduction Stand (for copying), collapsible	25.00
Chamois Bag for Range Finder	.75	Plumb Weight for above	2.50
Yellow Filters for "Leica" (Density No. I, No. II or No. III), each	2.75	Sliding Arm to fit enlargers for copying work	9.00
Soft Leather Bag for Filters, each	.50	Copying Lenses, each	7.50
Sun Shade for Lens	2.50	Fixed 2⅜x3⅝ enlarger with lamp complete	25.00
Wire Release with Arresting Screw for time exposure	2.00	Fixed 3¼x5½ enlarger with lamp complete	27.50
Ball-Jointed Tripod Head	2.50	Universal adjustable enlarger complete	62.00
Stereo Slide	7.00		
"Uleja" Film Strip Projector	50.00		
Carrying Case for "Uleja"	7.50		

THE GIFT SUPREME

"Leica" Focal Plane Camera with Three Magazines, $88.00

For complete details of any of the above items see your Dealer or write for PAMPHLET No. 1127 (NL)

The Leica is

A Product of E. LEITZ Precision

E. LEITZ, INC.
60 East Tenth Street, NEW YORK, N. Y.

Agents for Pacific Coast States:
SPINDLER & SAUPPE

86 Third Street
San Francisco, Calif.

811 West Seventh Street
Los Angeles, Calif.

Getting Around In New York City

While these photographs are intended as an aid to those attending the New York science meetings, those unable to attend may wish to save them for use during their next New York trip.

The airplane photograph printed above shows the part of New York of most interest during the science meetings. Locate your hotel. A study of the photograph will enable you to visualize the city. The Broadway subway follows this curving street, and famous Fifth Avenue is also clearly shown.

The five keys to New York transportation for the Christmas meetings are:

The Broadway-Seventh Avenue Subway.

The Sixth Avenue-Columbus Avenue Elevated.

The Fifth Avenue Busses.

Taxicabs.

Walking.

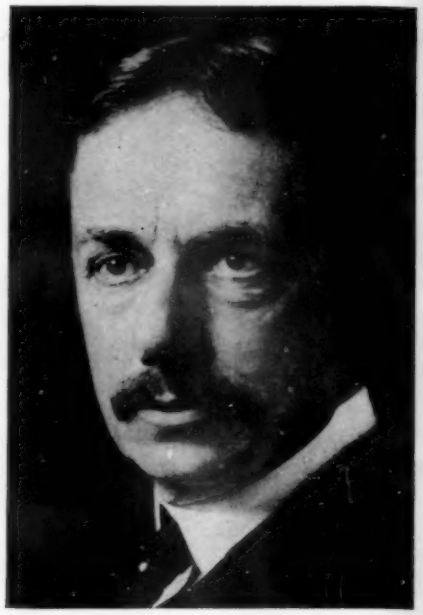
The following are recommended routes:

Hotel District to American Museum of Natural History—Take uptown elevated on Sixth Avenue at 33d, 38th, 42d or 50th Street, alighting at 81st Street Station at corner of Museum Square. Or take I. R. T. westside uptown *local* subway at Pennsylvania Station, Times Square, 50th and Broadway or Columbus Circle, alighting at 79th Street and walking east two blocks.

Hotel District to Columbia University—Take I. R. T. Broadway westside uptown subway, at Pennsylvania Station, Times Square, 50th Street or Columbus Circle, being sure to take a train labeled "Broadway-7th Avenue", alighting at 116th Street. Or take northbound buses on Fifth Avenue (if you have the time), numbers 1, 4, 5 or 8, asking the conductor to let you off at stop nearest Columbia University.

Hotel District to American Geographical Society—Take I. R. T. Broadway uptown subway as for Columbia Univer- (*Turn to next page*)

THE AMERICAN MUSEUM OF NATURAL HISTORY, as seen from the air shortly before the new wing was completed



PROF. HENRY FAIRFIELD OSBORN, president of the American Museum of Natural History and of the American Association for the Advancement of Science

sity continuing to and alighting at 157th Street.

Hotel District to Metropolitan Museum of Art—Take northbound Fifth Avenue buses numbers 1 and 4, alighting at the museum. Or during rush hours take I. R. T. east side uptown subway at Grand Central Terminal (reached by shuttle from Times Square) alighting at 86th Street and walking three blocks west to Central Park.

Hotel District to Engineering Societies Building—Walk or taxi to 29 West 39th Street.

Columbia University to American Museum of Natural History—Take downtown *local* subway at 116th Street, alighting at 79th Street and walking east two blocks.

Columbia University to American Geographical Society—Take uptown subway at 116th Street, alighting at 157th Street.

Columbia University to Metropolitan Museum of Art—Take southbound buses numbers 1 or 4 at 116th or 120th Street and Riverside Drive, alighting at the museum. Or taxi.

American Museum of Natural History to Metropolitan Museum of Art—Taxi or walk eastward across Central Park.

Don't use taxicabs for short trips during crowded hours in the downtown districts, or for long trips northward or southward, as for instance between hotel and American Museum or Columbia University. Walk when downtown, and use the subway or elevated for the long north and south trips. Don't use surface cars unless you want the experience.

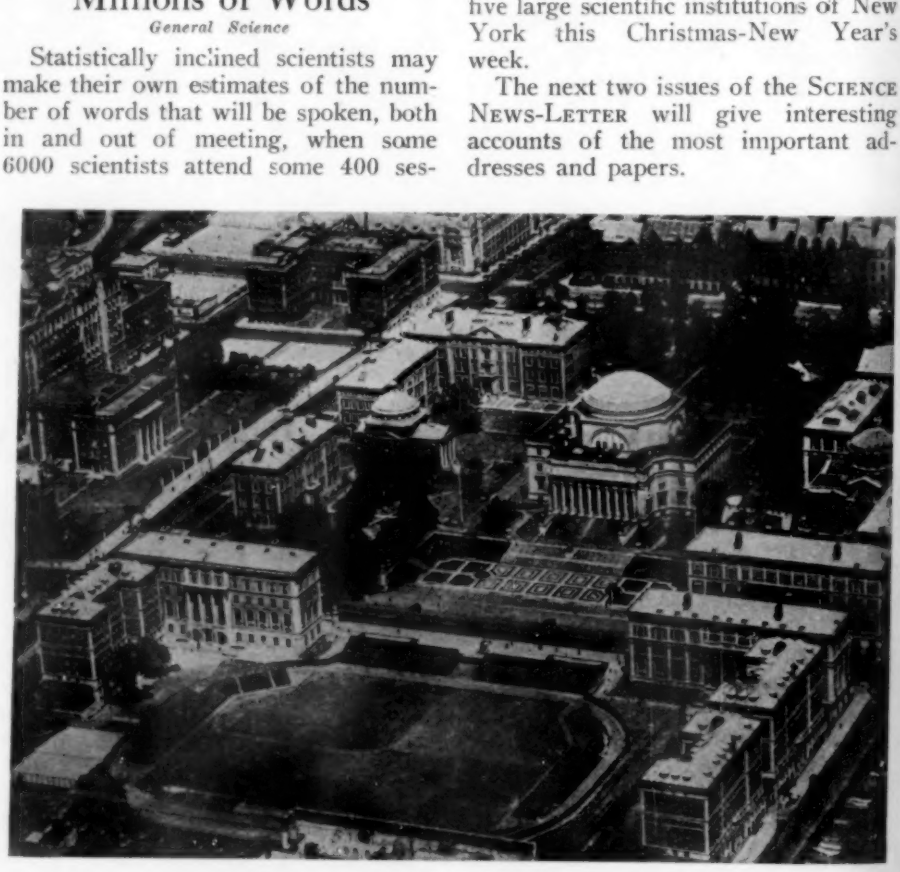
Science News-Letter, December 22, 1928

Millions of Words

General Science

Statistically inclined scientists may make their own estimates of the number of words that will be spoken, both in and out of meeting, when some 6000 scientists attend some 400 sessions and deliver some 1500 papers before sections and affiliated societies of the American Association for the Advancement of Science meeting in five large scientific institutions of New York this Christmas-New Year's week.

The next two issues of the SCIENCE NEWS-LETTER will give interesting accounts of the most important addresses and papers.



Airplane photographs by Fairchild Aerial Surveys, Inc.

COLUMBIA UNIVERSITY AS SEEN FROM AN AIRPLANE. The white building with the dome is the Library, the low building in back of it is University Hall, where registration for the A. A. A. S. meeting will take place

Note-Raising to Be Impossible

Criminology

Note-raising will be made practically impossible when the new paper money comes into circulation on July 1, 1929, according to the testimony of W. H. Moran, Chief of the U. S. Secret Service, before the House Committee on Appropriations.

This will be true, Mr. Moran states, because of the restriction in the number of designs. George Washington's portrait, for example, which in the past has been on not only one-dollar bills, but on twenty-dollar gold certificates as well will in the future be employed only on one-dollar bills.

"We can now go to the people and say: 'You must not take a bill with Washington's portrait on it for more than one dollar.'"

The new paper money, which will consist of small-size bills in all denominations, will save the Government half a million dollars a year on its paper bill. Four additional notes will be made from a sheet of paper.

While note-raising will be made more difficult with the new currency, Chief Moran of the U. S. Secret Service declares there will be no difference with regard to ease of counterfeiting.

"It will not be easier to counterfeit. It requires just as much skill and labor to counterfeit a bill of small size as one of large size."

The largest part of the spurious American money coming in from Europe, Moran says, consists of raised bills. "For awhile there was considerable counterfeiting of our currency in Europe. That has now been largely suppressed through the activities of the police departments in Europe."

Though the chief source of counterfeiting activities is in this country, Moran states he has had considerable difficulty with some very expertly-made counterfeits coming out of Mexico.

The average citizen, Mr. Moran says, seldom discovers counterfeit money. "You would be astonished at the character of counterfeit money which is circulated freely among our people. Many of the counterfeit bills are nothing more than printed imitations. Some of them have appeared in circulation recently that were nothing more nor less than carbon copies. Some of them even reversed the image. I think that is largely due to the practice that obtains among the people now of depending upon the distinctive character of the paper."

Science News-Letter, December 22, 1928

Nervous Disease in Industry

Hygiene

Nervous diseases are a frequent cause of sickness absence in industry, studies made by Dr. Millais Culpin of London Hospital have revealed. Apparently these conditions have little or no relation to the work or working environment.

Seven of the first twelve cases on the annual sickness records of one large firm showed losses raging from 94 to 278 days because of nervous diseases. These latter were listed as nervous breakdown, nervous exhaustion, dyspepsia and nervous debility, heart and nervous overstrain. In this particular firm, the workers are reasonably well paid, working conditions are hygienic and the workers are not driven at their work. In firms where the conditions are less pleasant and the work is strenuous, the absence rate for diseases of this type is lower.

Dr. Culpin likens this type of nervousness to that which appeared as shell shock during the war. Its basis is emotional, not physical, although the physical symptoms are very real to the patient.

Science News-Letter, December 22, 1928

A Calendar on Bones

Archæology

A most interesting and valuable pair of specimens in the form of two human femora or thighbones engraved with carefully executed day signs from the Aztec calendar were recently presented to the Los Angeles Museum by Wesley T. Hagadorn.

The bones were obtained in Mexico by Mr. Hagadorn's father some thirty years ago. He secured them from an Indian who found them in the muck of Lake Tezcuco. The femora are of the same length and are evidently from the same person.

However, the signs upon them vary in several respects. Upon the right femur the symbols begin with the Aztec day sign "Acatl" or "Reed" and end with "Quauhtli" or "Eagle." There are ten signs upon the right femur and eight upon the left.

The workmanship upon the bones is excellent. The designs have been incised with precise neatness that is remarkable. Even when viewed under a microscope no slips of the instrument used in doing the work can be observed.

Science News-Letter, December 22, 1928

Carbon Monoxide

Chemistry—Physiology

Carbon monoxide, deadly gas that gives its victims no warning, is fatal in large amounts, but in small amounts it has no harmful effects on the health or mind of the persons exposed to it, even for indefinite periods of time. Two parts or less of carbon monoxide in 10,000 parts of air is considered a safe amount.

The Bureau of Mines and the U. S. Public Health Service have just completed a study of the effects of this gas, both physical and mental, on healthy individuals. A report of the study will be issued shortly. Six persons who had been examined by competent physicans and pronounced in good physical and mental health were exposed to carbon monoxide in concentration of from 1 to 4 parts in 10,000 for 4 to 7 hours every day for 68 days. They were examined frequently during the test and at its finish by physicians and psychologists. The subjects remained in good health and showed no lack of appetite, no change in weight and no muscular weakness during or after the test. No harmful effects on the minds of the subjects were discovered by the psychologists.

When the concentration of the carbon monoxide was 2 parts per 10,000, half of the people showed no symptoms of carbon monoxide poisoning, such as headache, dizziness or faintness, no matter how long they were exposed. A few at this concentration had headache after three and one-half to four hours exposure. However, when the concentration was raised to 3 parts per 10,000, over half the subjects had distinct symptoms in five hours. Almost all of the people tested showed symptoms within three and one-half or four hours when the concentration was 4 parts per 10,000.

No harmful effects on the minds of the subjects could be found by means of psychological tests now known.

The source of carbon monoxide in this investigation was the exhaust of a gasoline engine. The test showed, among other things, that any ill-effects felt by traffic officers in the Holland Tunnel between New York and New Jersey are not due to carbon monoxide. The concentration of the gas in the tunnel is kept much lower than the lowest used in the tests.

Science News-Letter, December 22, 1928

TIME

is the important factor
in all activities

SAVE IT

by using

The Wistar Institute Bibliographic Service

which brings to your table authors' abstracts of all papers about to appear in the:

Journal of Morphology and Physiology
The Journal of Comparative Neurology
The American Journal of Anatomy
The Anatomical Record
The Journal of Experimental Zoology
American Anatomical Memoirs
American Journal of Physical Anthropology
Folia Anatomica Japonica (Tokyo, Japan)
Biological Bulletin
The Journal of Parasitology
Stain Technology
Australian Journal of Experimental Biology and Medical Science (Adelaide, South Australia)

Advance Abstract Sheets, $3.00 per year.

Bibliographic Service Cards $5.00 per year.

Both appear before the complete articles are published.

THE WISTAR INSTITUTE

Thirty-sixth St. and Woodland Ave.
Philadelphia, Pa.

TRIARCH
BOTANICAL PRODUCTS

Preserved Plants
Prepared Microscope Slides
Laboratory Equipment

"Prepared by a Botanist for Botanists"

George H. Conant
Botanical Laboratory
University of Pennsylvania
Philadelphia, Pa.

Science Strides Forward in 1928—*Continued*

active and destroyed Libog and several neighboring villages in the philippines.

Vast fields of pumice and volcanic ash, floating on the surface of the south Pacific Ocean between the Fiji and Tonga groups of islands, revealed the existence of a new submarine volcano.

Falcon Island in the South Pacific, famed for its sudden disappearances, showed its head above the waves again.

A wheeled boat, able to travel on land and water, was used in an exploration of the volcanic islands of Alaska by Dr. T. A. Jaggar of the Hawaiian Volcano Observatory.

Roy Chapman Andrews returned to America at the close of the 1928 season of the Central Asiatic Expedition, bringing much fossil material with him.

The discovery by two high school boys of Fillmore, Utah, of an unfossilized skull of an extinct camel, found in a lava cave some twenty miles southwest of their home, revolutionizes our ideas of the course of events in recent geological time, stated Prof. Alfred S. Romer, of the University of Chicago, who examined the skull.

The greatest geyser now active in the world and the greatest of all history, except the old Excelsior Geyser which has been extinct since 1888, became active in Yellowstone National Park.

New knowledge of the origin and history of the Grand Canyon of the Yellowstone was obtained as a result of the geological research of the Princeton Summer School of Geology and Natural Resources.

A new national park, Bryce Canyon, was established on September 15.

New fossil footprints were found on the north rim of the Grand Canyon of Arizona.

Fossil seaweed found in the rocks along the Penobscot River demonstrated that the ancient Cambrian Sea once flowed over the region of Maine.

Plans were laid for the first international census of agriculture, to be taken in 1929 and 1930.

More than 1,000 square miles of Alaskan wilderness were surveyed by the new airplane-packhorse method by the U. S. Geological Survey.

Twenty-one earthquakes, of unusually severe character, in various parts of the world, were located by experts of the U. S. Coast and Geodetic Survey, in cooperation with Science Service, within a few hours after they occurred, in many cases anticipating by several days actual reports from the damaged area.

A new electrical seismograph, for recording distant earthquakes, was invented by Dr. Frank Wenner, of the U. S. Bureau of Standards, and was proved satisfactory in numerous tests.

Severe landslides occurred at Santos, in southern Brazil, early in March.

Medicine

A new minimum death rate for tuberculosis was reached in 1928, the Metropolitan Life Insurance Company announced. The new rate is 72.1 per 100,000.

Yeast exposed to ultra-violet rays, either from sunlight or an artificial source, has its fertility vitamin E, destroyed, Dr. B. M. Strong of the school of medicine at Loyola University, Chicago, found.

Vitamin D, which prevents rickets in young animals, may also play an important part in the development of the egg, Dr. Alfred F. Hess, of New York, announced.

The presence of copper in the diet is a preventive of anemia, Dr. E. B. Hart, of the University of Michigan found.

Teeth, shining by fluorescent light in the dark under the influence of ultra-violet rays, reveal by dark spots the regions where decay will develop, Dr. H. C. Benedict, of the Northwestern University school of dentistry, found.

An instrument for measuring a person's sensitivity to sunburn was invented by Dr. Robert C. Burt, of Pasadena, Calif.

Dr. Hideyo Noguchi, of the Rockefeller Institute, died of yellow fever as a martyr to his researches on that disease, leaving research which may show that the disease has two forms.

Eleven lepers were released by the U. S. Public Health Service, apparently cured and no longer a menace to the community, from the National Leper Home at Carville, La.

Means were found for administering chaulmoogra oil, the remedy for leprosy, without the pain and nausea which patients have had to endure in the past.

Epilepsy was produced artificially in dogs by a brain operation by Dr. Lawrence O. Morgan, of the University of Illinois.

A method of investigating the brain by means of X-ray photographs was perfected by Dr. Max Ludin, director of the Roentgen Institute of the Citizens' Hospital of Basel, Switzerland.

High-frequency electric currents were found to be beneficial in checking cancerous growths in mice and chickens.

For his work on tularemia, or rabbit fever, Dr. Edward Francis of the U. S. Public Health Service was awarded the gold medal of the American Medical Association, the committee on awards declaring that his contributions to the knowledge of the disease were the most important medical work of the year, judged on the basis of originality.

The final step in scientific conquest of Oroya fever, which afflicted the Incas and still occurs in Peru, was announced by four scientists of the Rockefeller Institute, who proved that the disease is spread by gnats.

Injections of glucose were found to be beneficial in acute cases of encephalitis, the European sleeping sickness.

A new theory that cancer is associated with and possibly controlled by the relative alkalinity of the blood was advanced by Dr. Ellice McDonald, chairman of cancer research of the University of Pennsylvania.

A lack of the important beta hormone, which controls the water depots of the body and the ability of the tissues to use water and which is in the post-pituitary gland at the base of the brain, may be made up by an artificial supply from animal glands, Dr. Oliver Kamm of Detroit, Mich., announced.

Operation of apparatus transmitting short radio waves was found to produce fever in bystanders, and Dr. Helen R. Hosmer of Albany Medical College began experiments with the electrically induced fever on animals, since fever is now an important treatment of progressive paralysis.

The effect of a dose of medicine depends not merely on the chemical make-up of the medicine but also on the alkalinity of the blood and on the particular balance of certain blood elements, experiments by Dr. William Salant, of the University of Georgia Medical School, indicated.

A new water purifier, succinchlorimide, that will not deteriorate with age was announced by its discoverer, Major C. B. Wood of the U. S. Army Medical School.

A new industrial hazard, chromium poisoning, definitely increasing as a result of the widespread use of chromium plating on automobile accessories, was reported to the American Medical Association by Dr. Jackson Blair of Cleveland and studied by the U. S. Public Health Service.

The paper mulberry is one of the plants responsible for "hay fever," Dr. Harry S. Bernton of Washington announced.

Nobel Prize in medicine for 1928 was awarded to Prof. Charles Nicolle of the Pasteur Institute at Tunis in recognition of his typhus fever researches, which have shown how the disease may be prevented.

The Grand Cross of the French Legion of Honor was awarded to Dr. Albert Calmette of the Pasteur Institute, for his work in producing a tuberculosis vaccine.

Physics

The cosmic rays which bombard the earth from outer space are evidence of the continuous creation of common elements out of electrons there, Dr. R. A. Millikan and Dr. G. Harvey Cameron, of the California Institute of Technology, announced.

The Michelson-Morley experiment was repeated by Prof. A. A. Michelson, at Mt. Wilson Observatory, with much improved apparatus, and he announced that no motion of the earth through the ether of space could be detected.

Experiments with a thin film of gold conducted by Prof. George P. Thomson of the University of Aberdeen demonstrated that a stream of electrons contains waves, which may be the electrons themselves or may accompany the real electrons.

Ultra-violet rays in sunlight are responsible for the ionization of the upper layer of the earth's atmosphere which is connected with the Kennelly-Heaviside layer that reflects radio waves downwards, thus making long distance radio communication possible, announced Dr. E. O. Hulburt, of the U. S. Naval Research Laboratory.

The hypothetical element "coronium" visible in the sun's corona during eclipses may be identical with the rare gas argon, experiments by Dr. Ira M. Freeman of the University of Chicago indicated.

The highest electrical potential ever achieved by man, more than 5,000,000 volts, was obtained by Dr. Gregory Breit and Dr. M. A. Tuve at the Department of Terrestrial Magnetism of the Carnegie Institution of Washington.

X-rays produced at the California Institute of Technology, with an electrical force of a million volts, by Drs. S. C. Lauritsen and R. D. Bennett, showed the way towards artificial production of cosmic rays.

"Artificial lightning" at a potential of 3,600,000 volts was generated at the Pittsfield, Mass., Laboratory of the General Electric Company.

Inaudible sound waves, nicknamed the "death whisper" because they kill small organisms in water, were produced at the unprecedented rate of two and one-half million per second in the private laboratory of Alfred L. Loomis at Tuxedo Park, N. Y.

Sheets of iron, gold and other metals so thin as to be transparent, were prepared by Dr. Carl Müller of Charlottenburg, Germany.

(*Turn to next page*)

Science Strides Forward in 1928—*Continued*

Penetrating radium rays were used to test metal castings for flaws at the Russian State Radium Institute, Leningrad.

That helium gas leaks slowly through glass, even through high-quality pyrex, was demonstrated by experiments conducted by three Harvard scientists.

The use of exploding gas in rockets as a propulsive force for automobiles was successfully demonstrated in Germany by Fritz Opel.

The first actual measurements of the speed of lightning showing that it takes about one seven-thousandth of a second to complete itself and that it starts from the cloud and the ground at nearly the same instant, the two ends uniting in mid-air approximately one seven-thousandth of a second later, were determined by Prof. C. V. Boys, noted British physicist.

Outdoor television was pronounced possible through use of an extra large lens, with an extra large scanning disc, and extra large holes, all of which results in more light being picked up and focused on the sensitive cell, in a report to the Optical Society of America by Dr. Frank Gray and Dr. Herbert Ives.

The development of talking motion pictures was continued and several photodramas with complete dialogue and no printed titles were produced.

A million-volt cathode ray tube, equivalent in radiating power to a ton of radium, was built by Dr. W. D. Coolidge of the General Electric Company.

An improved cathode ray tube, simpler than an X-ray tube, was perfected by Dr. C. M. Slack, of the Research Department of the Westinghouse Lamp Co., making it possible for any well equipped research laboratory to have at its disposal the important cathode rays.

A high-power short-wave vacuum tube able to light electric lamps without touching them was demonstrated in the laboratories of the General Electric Company, Schenectady, N. Y.; it heats flesh and blood in its vicinity, and can cause an artificial fever of 100 degrees Fahrenheit.

Two Swiss Physicists, Dr. A. Piccard and Dr. E. Stahel, performed an ether-drift experiment with negative results.

A new X-ray moving picture camera which can be set to take pictures at regular intervals was invented by Arthur C. Pilsbury, of Berkeley, California, and believed to have important possibilities in showing inner processes, such as the knitting of broken bones.

A red neon arc light, claimed to be capable of shining through fog, and intended for airport beacon use, was invented by Dr. Clifton G. Found, of the General Electric Co., in collaboration with J. D. Forney, of the Cooper-Hewitt Electric Co.

A magnetic method of detecting flaws in steel castings as large as five or six inches thick was reported by Alfred V. de Forest, of Bridgeport, Conn.

A new metal so hard that it bores smooth holes in concrete, or cuts screw threads in a glass rod, was produced from a compound of tungsten, carbon and cobalt by Dr. Samuel L. Hoyt, of the research laboratory of the General Electric Co., and given the name carboloy.

A new camera, which makes photographs that appear solid to the eyes and which shows different sides of the object depending on the angle from which the picture is viewed, was exhibited to scientists by its designer, Dr. Herbert E. Ives, the inventor of the method being Dr. C. W. Kanolt.

A triple film which would enable the amateur to make color snapshots with ordinary light and an ordinary camera was announced by F. J. Tritton, a British scientist.

Natural color movies that everyone can make and project were developed by the Eastman Kodak Company under the direction of Dr. C. E. K. Mees.

The Congressionel Gold Medal was conferred on Thomas A. Edison by action of Congress and presented by Secretary of the Treasury Mellon at the Edison Laboratories, October 20.

The Optical Society of America celebrated the fiftieth anniversary of Prof. Albert A. Michelson's first announcement of his determination of the velocity of light by naming its annual meeting the Michelson Meeting.

A medal to be awarded annually by the Optical Society of America, for outstanding work in optical science was founded by Dr. Herbelt E. Ives of the Bell Telephone Laboratories in honor of his father, Frederic E. Ives, inventor of the halftone process and other photographic methods.

Psychology

A comprehensive program for study of the psychology of the highway was outlined and work started on the project by A. R. Lauer and A. P. Weiss at Ohio State University, cooperating with the Division of Anthropology and Psychology of the National Research Council.

Marked differences in the activity pattern during sleep shown by persons of different ages and different occupations were discovered in investigations by Dr. H. M. Johnson, of the Mellon Institute of Industrial Research, at the University of Pittsburgh.

The sense capacity of Helen Keller, remarkable blind and deaf woman, was studied by Dr. Frederick Tilney, of Columbia University, who reported that her senses of touch, smell and taste are no more keen than those of the average person.

By statistical methods, Prof. L. L. Thurstone, of the University of Chicago, established the absolute zero of intelligence as occurring in babies at birth or a few months before and showed that there are greater differences in intelligence among older children than among young children.

A standardized mental test for babies from one month to one year of age was developed at the Catholic University of America by H. E. Linfert and H. M. Hierholtzer.

A schedule of 135 behavior manifestations which are characteristic of normal stages of development in the first year of life was worked out by study of several hundred normal and defective infants at the Yale Psycho-Clinic.

Sleeping habits of children were studied at the University of Toronto by Dr. W. E. Blatz, and Nellie Chant, who reported that daytime sleeping habits break up naturally about the third year, and that regular sleep is one of the fundamental needs of the young child.

A survey of 200 juvenile delinquents, made by C. H. Calhoon of the Ohio State Bureau of Juvenile Research, demonstrated that normal boys, as well as subnormals, may develop into criminals if environment and emotional make-up favor that tendency, and that normal boys tend to commit crimes against property whereas subnormals are more apt to commit offenses of truancy and immorality.

That the abnormally large percentage of failures in modern language classes is due to the text books and methods of teaching rather than to the low mentality of students taking these courses was demonstrated by an intelligence test given to 1,000 high school students of Spanish by Walter Kaulfers of Stanford University, which revealed that the students were above average in mentality.

Mental tests given to whites, negroes, and mixed bloods in Jamaica, by Dr. C. B. Davenport, of the Carnegie Institution of Washington, demonstrated striking racial differences, the white race being superior in reasoning and judgment and the negroes showing superiority in certain memory tests.

Radio

Experiments with echoes from radio waves led Dr. Carl Stormer, Norwegian physicist, to conclude that radio waves can travel at least a million miles away from the earth and are not completely stopped by the Kennelly-Heaviside layer, which has been supposed to act as an opaque screen to the waves.

Arrangements were made for radio weather reports to be sent twice daily from Point Barrow, Alaska, to the Weather Bureau headquarters, thus making it possible to send out warnings of cold waves affecting the North Central states several days earlier than ever before.

A quartz crystal control for radio and television, sensitive to one part in ten million, was perfected at the Bell Telephone Laboratories.

Nine radiovision stations were broadcasting programs and two more stations were under construction by the end of 1928.

Radio movies, received by a radiovisor using a small drum instead of a large disc, were publicly exhibited by C. Francis Jenkins, Washington inventor.

A radio beacon for aircraft was developed by the U. S. Bureau of Standards, so designed that dual frequency broadcasts from landing fields are recorded visually on the airplane's instrument board in such a way as to signal any deviation from course.

A new loudspeaker, giving 300 times more volume than that obtainable from any existing type, was developed in the Bell Telephone Laboratories.

The world's first newspaper radiovision broadcast program was published.

The Federal Radio Commission re-allocated wave lengths for all stations in the United States on November 11, 1928, in an effort to prevent conflicts in broadcasting.

Meetings of 1,000 engineers in New York and 500 electrical engineers in London, were connected by trans-Atlantic radio telephone and they conducted a joint session as though they were in one auditorium.

Photographs were sent from Oakland, Calif., to Schenectady, N. Y., by radio on May 1.

Sydney, Australia, and Schenectady, New York were placed in two way radio telephone communication on short waves.

Science News-Letter, December 22, 1928

The sourest fruit is the tamarind, which is more than twice as acid as the lemon.

Americans Saturated With Sugar

Physiology

Lack of vitamins and too much sugar in the diet was charged with being responsible for the large number of stomach and intestinal diseases in this country, in a report presented by Dr. Seale Harris of Birmingham, Ala., to the American Medical Association.

"Many sugar saturated, vitamin starved Americans, i. e., those who live largely on white flour bread, white potatoes, white rice, lean meats, sugar saturated coffee, and sugar laden desserts, with candy and soft drinks between meals, would seem to be susceptible to ulcer and other abdominal diseases in which infection plays a part," Dr. Harris declared.

Experiments have shown that animals and human beings who are not eating enough vitamins are very susceptible to all kinds of infections. Lowered resistance to infection occurs in the stomach and intestines as well as in the nose and throat. The person whose diet is lacking in vitamins may be subject to frequent colds, pneumonia and tuberculosis, or he may be subject to appendicitis, stomach ulcers, gall-bladder disease or colitis.

More than one-fourth of the patients in the general hospitals of the United States are there because they have one of these stomach or intestinal diseases that are due to infection. The increased amount of abdominal diseases is paralleled by the increased sugar consumption in this country. Fifty years ago a man ate, on an average, 26 pounds of sugar in a year. Now he eats 106 pounds. That is equivalent to about a teacupful a day of sugar. White flour, potatoes and other starches have shown a corresponding increase in consumption.

Too much sugar and starch and not enough vitamins is the fault Dr. Harris finds with our national diet. He is at present studying the food habits of ulcer patients in the hope of obtaining further proof of his theory. He reported that "a very large percentage of patients with ulcer belong to the class who overindulge in carbohydrates, particularly the sugar products that are deficient in vitamins."

Ulcer patients should be fed diets rich in vitamins, in order to build up their resistance and prevent recurrences, Dr. Harris recommended. The usual diet now given patients with stomach ulcers is very low in vitamins.

Science News-Letter, December 22, 1928

Skate on Hypo "Ice"

Physics

Ice-skating in the movie-dramas isn't done on ice at all. The Hollywood climate is too balmy. Chemists have come to the rescue, and photographer's "hypo" has been substituted for the ice.

For example, the motion-picture director is desirous of staging a supposed Canadian championship skating tournament. Following the suggestion of Prof. Arthur R. Maas, industrial chemist of the University of California, he now buys a ton or two of hypo. The chemical is spread about the premises, groomed with a hot iron, cooled, and is ready for the skaters. All of the fancy stunts done on ice seem equally well performed on hypo, and the movie patron doesn't know the difference.

Hypo is known to chemists as a compound of sodium thiosulfate with a considerable quantity of water. At normal temperatures it is a dry, glassy, but somewhat soft solid of much the same texture as ice. Unlike ice, however, it melts at 118 degrees instead of 32.

Science News-Letter, December 22, 1928

Mirror Writing Natural

Psychology

Parents should not become alarmed when a left-handed child starts to write in outlandish fashion so that the letters can only be read when held up to a looking glass. This reversed writing is as normal for the left-handed child as ordinary writing is for the right-handed, according to Edward C. Blom, of Columbia University.

Mirror-writing has always seemed a mysterious phenomenon, and scientists who have made investigations of it have produced a good deal of contradictory evidence. After making some investigations of his own and studying the evidence accumulated in the past 50 years, Mr. Blom reports to the *Psychological Bulletin* that while mirror-writing has sometimes been associated with feeble-mindedness and various types of mental and physical disturbances, it should not be taken as a sign of such defects in the left-handed person, because mirror-wise is the natural way to write with the left hand.

Science News-Letter, December 22, 1928

Nature Ramblings

By Frank Thone

Natural History

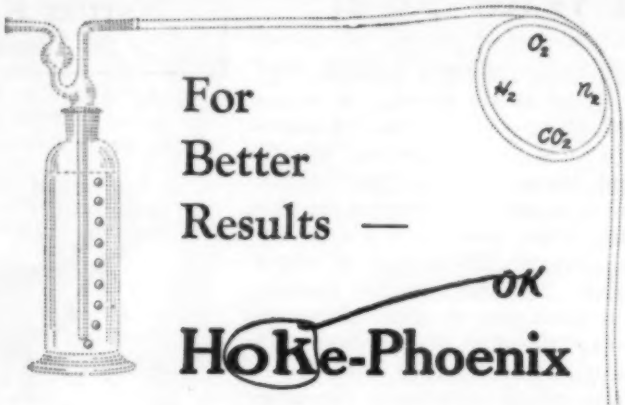
Santa Claus' Steeds

Santa Claus rides through the air behind six fine reindeer, so they tell us. His neighbors, away up north, are the Lapps, who have used reindeer as sort of combination horses to haul their sleighs and cows to milk and eat, for many centuries. Probably Santa Claus got the idea from the Lapps and bought his steeds in some reindeer market in Lapland.

For the reindeer has been one of the useful animals almost as long as there has been a human race to make use of any kind of animal at all. Even before there were any Lapps, and very long before there was any Santa Claus, away back in the Stone Age, when all Europe was as cold and snowy as Lapland is today, the reindeer wandered far to the south. In those days people lived in caves and decorated their homes by drawing pictures of animals on the walls. And in caves far in the south of France we find drawings of the reindeer, which have never been seen that far south by any man who knew how to write a story about it. The drawings are all we have to show, but they are so well done that there is no doubt that the people who made them knew the reindeer. And there are so many drawings, some of them showing whole herds of reindeer, that we know there must have been many of these animals in the south of Europe during that far-away time.

One other evidence we have of the presence of reindeer in the France of the Stone Age. That is the bones and horns of the animals themselves. In the caves where the cave men lived we find the bones they threw away after they had eaten the meat—for cave men were untidy housekeepers. Some of the antlers they carved into tools, and these were often decorated with pictures.

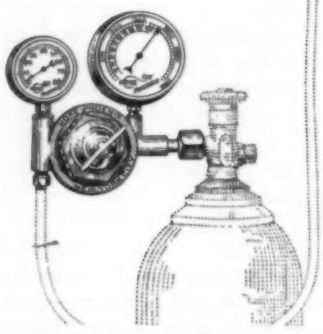
Science News-Letter, December 22, 1928



For Better Results — OK Hoke-Phoenix

Reducing Valves—Needle Valves—Flo-Gages
Valvo-Gages—Micrometric Controls

IF YOU ARE USING any compressed gas—hydrogen, oxygen, air, etc., you need Hoke equipment for regulating your delivery pressures. These devices obviate the danger, dirt, and expense attending the use of generators.



Tanks of compressed gases are available everywhere; and with Hoke equipment you can obtain exactly the pressure you want without spurting, sucking back, or interruption.

Models for all purposes, all purses. Some suitable for use with the corrosive gases. Prices, $1.00 to $39.00.

For exacting work a reducing valve, such as illustrated, is best. But in many cases a simpler and cheaper device is adequate.

Used in pH determinations; when running combustions; reduction with hydrogen; calorimetry; bubbling gases through solutions: with oxygen blowpipes; for spraying with compressed air. And countless other jobs.

See these devices in operation at our exhibit, Columbia Gymnasium, Christmas week

This is the Hoke glassworking blow-pipe, for Pyrex and quartz glass. For use with ordinary city gas, oxygen, and compressed air.

With quartz, use gas and oxygen.

With Pyrex glass, use gas plus air, adding more or less oxygen as needed. It can also be used with soft glass.

Enthusiastically received by experts.

Shall we send you one to try?

On display at Columbia Gymnasium, Christmas week

Your dealer, or

OK **Hoke Incorporated**
22 Albany Street, New York City

Ask for folder N

HOUGH'S BOOKS CHRISTMAS GIFTS
of lasting value

Handbook of Trees

The 891 illustrations enable one to identify all of the trees east of the Rocky Mountains and north of the Gulf States at any season.

$8 and $15, according to binding.

American Woods

A collection of actual wood sections (showing end, quarter and flat grains of each species), with text, telling uses, properties, distribution, etc. The plates in which the thin sections are mounted are removable for examination.

Issued in 14 volumes, 25 species in each. $10 and $15 per vol., according to binding. Send for list of species in each volume.

ROMEYN B. HOUGH CO.
LOWVILLE, N. Y.

MICROSCOPY

Instruction—evening classes now forming. Construction, manipulation, illumination, accessories, practical methods of slide making.

For particulars address

CHARLES P. TITUS

Room 1501 Pershing Square Bldg.

New York City

Staff of Science Service—Director, Edwin E. Slosson; Managing Editor, Watson Davis; Staff Writers, Frank Thone, James Stokley, Emily C. Davis, Jane Stafford; Librarian, Minna Gill; Sales and Advertising Manager, Hallie Jenkins.

Board of Trustees of Science Service—*Honorary President*, William E. Ritter, University of California. Representing the American Association for the Advancement of Science, J. McKeen Cattell, *President*, Editor, Science, Garrison, N. Y.; D. T. MacDougal, Director, Desert Laboratory, Tucson, Ariz.; M. I. Pupin, Professor of Electromechanics, Columbia University, New York City. Representing the National Academy of Sciences, John C. Merriam, President, Carnegie Institution of Washington; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif.; Dr. David White, Senior Geologist, U. S. Geological Survey. Representing National Research Council, Vernon Kellogg, *Vice-President and Chairman of Executive Committee*, Permanent Secretary, National Research Council, Washington, D. C.; C. G. Abbot, Secretary, Smithsonian Institution, Washington, D. C.; Harrison E. Howe, Editor of Industrial and Engineering Chemistry. Representing Journalistic Profession, John H. Finley, Associate Editor, New York Times; Mark Sullivan, Writer, Washington, D. C.; Marlen E. Pew, Editor of Editor and Publisher, New York City. Representing E. W. Scripps Estate, Harry L. Smithton, *Treasurer*, Cincinnati, Ohio; Robert P. Scripps, Scripps-Howard Newspapers, West Chester, Ohio; Thomas L. Sidlo, Cleveland, Ohio.

FIRST GLANCES AT NEW BOOKS

ŒUVRES DE PASTEUR. TOME V: ETUDES SUR LA BIERE—Edited by Pasteur Vallery-Radot — *Masson et Cie.* (120 fr.). This fifth volume of the monumental series, which will when completed gather into one place all the works of Pasteur, sets forth in admirable order the classical researches that established for all time the biological basis of fermentation. Of course, no review in the usual sense is possible, nor would such a near-impertinence be necessary: one needs only record that the new volume is out and that it is worthy of the companionship of the four it will find awaiting it on the shelves of scholars.

Zymology
Science News-Letter, December 22, 1928

THE MARINE FISHES OF PANAMA —Seth E. Meek and Samuel F. Hildebrand—*Field Museum* ($4.50). Gratifying progress is being made in completing our knowledge of the natural history of the Panama region and in assembling it into convenient volumes for the use of students. The present volume is a very worthy addition to the growing Panama literature.

Ichthyology
Science News-Letter, December 22, 1928

A NATURALIST AT THE SEASHORE —William Crowder—*Century* ($10). A most sumptuously gotten up book on the strange life to be found on the rocks and in the tide-pools, by one who has devoted years to the companionship of our little brother, the seahorse, and our sister, the starfish.

Zoology
Science News-Letter, December 22, 1928

ABOUT YOUR DOG—R. S. Lemmon —*Stokes* ($2). Anyone worthy to own a dog realizes at once his responsibility and his relative ignorance —even as with a child, though in appropriately less degree. This compact book gives sound advice, neither sentimental nor hard-boiled. It is the kind of book for a proper man (or woman) who lives with a proper dog.

Zoology
Science News-Letter, December 22, 1928

THE SCIENTIFIC WORLD VIEW— W. K. Wallace—*Macmillan* ($3). A serious inquiry into the significance of science in the ordering of the social and economic life of the world.

Philosophy of Science
Science News-Letter, December 22, 1928

ANNUAL REPORT OF THE FEDERAL RADIO COMMISSION — *Government Printing Office* (25c). In which are reported the proceedings of the Commission during one of the most important periods of existence. A list of broadcasting stations under the reallocation is one of the many features that will be of interest.

Science News-Letter, December 22, 1928

MOLECULAR REARRANGEMENTS — C. W. Porter — *Chemical Catalog* ($4). "A rearrangement may be defined as a unimolecular reaction which results in a structural modification of the molecule," says the author. In this book he reviews the more important types of rearrangements, classifies them on the basis of structural similarities and presents the principal theories relating to mechanisms.

Chemistry
Science News-Letter, December 22, 1928

PHOTOCHEMICAL PROCESSES— George B. Kistiakowsky—*Chemical Catalog* ($5.50). An analysis, from the standpoint of the quantum theory, of those photochemical reactions of which the study has been sufficiently detailed so that some definite conclusions concerning the kinetics of the process can be reached.

Photochemistry
Science News-Letter, December 22, 1928

MECHANOCHEMISTRY AND THE COLLOID MILL — Pierce M. Travis— *Chemical Catalog* ($4). A book on the elementary principles of the new science of mechanical dispersion, involving the principles of physical chemistry, which the author calls "mechanochemistry" because it involves dispersion or deflocculation by mechanical means rather than by chemical.

Physical Chemistry
Science News-Letter, December 22, 1928

PLAY AREAS — Playground and Recreation Association of America— *A. S. Barnes* ($2). The design, equipment and beautification of playgrounds planned for various conditions and uses is described in this book. Emphasis is placed on playgrounds of small cities which perhaps need the assistance of such a volume most. Directions for making numerous types of homemade equipment are included. Photographs, plans and diagrams add to the practical usefulness of the book.

Sociology—Education
Science News-Letter, December 22, 1928

FUNDAMENTALS OF OBJECTIVE PSYCHOLOGY—John Frederick Dashiell—*Houghton Mifflin* ($3). A beginner's text for university use. Stress is laid upon physiological psychology that lends itself to demonstration and measurement, but introspection is not entirely barred. Attractive features are the exceptionally good collection of illustrations, charts and diagrams, and the frequent use of up-to-date experimental and research work to illustrate the author's points.

Psychology
Science News-Letter, December 22, 1928

INDIVIDUALITY AND EDUCATION— Joseph A. Leighton—*Appleton* ($2). Shortcomings of mass education in America are discussed. The remedy proposed is education of the individual, with the aim of building personalities effective in their social order. This is no plea for self-expression without inhibitions. The effectively educated person herein described would know, for example, how to make better use of leisure time than the present generation of adults. He would have a keener sense of social obligation, and an ethical philosophy of life.

Education
Science News-Letter, December 22, 1928

DIRECTORY OF PSYCHIATRIC CLINICS FOR CHILDREN IN THE UNITED STATES—*Commonwealth Fund* (75c). The second edition of this useful reference pamphlet. Not only are the clinics and their street addresses listed, but a brief paragraph gives the name of the director, the type of workers on the staff, the directing agency, and the scope of the service rendered.

Psychiatry
Science News-Letter, December 22, 1928

PERSONAL HYGIENE—A. Gertrude Jacob—*Christopher Publishing House* ($2). The old physiology textbook appears here in a candy coating. The book starts with a daily routine of rising, bathing, dressing, etc., for high school children. Discussion of each step in the routine gives the hygiene and physiology lesson. It is doubtful whether a high school textbook is the place for advocating a regime of fasting followed by an exclusive fruit diet. Otherwise the hygienic advice given is sound.

Hygiene
Science News-Letter, December 22, 1928

DEC 31 1928

First Glances at New Books—*Continued*

COMMERCIAL AND GOVERNMENT RADIO STATIONS OF THE UNITED STATES—Radio Division, U. S. Dept. of Commerce—*Government Printing Office* (15c.). A complete list of American radio stations, both on shore and ship, with owners, hours and wavelengths, correct to June 30, 1928.

Radio

Science News-Letter, December 22, 1928

ELECTRICAL ENGINEERING LABORATORY PRACTICE—Oskar E. Edison and Ferris W. Norris—*Ginn* ($2.80). A book intended to aid students in their electrical engineering power laboratory instruction. Both direct-current and alternating-current experiments are included.

Electrical Engineering

Science News-Letter, December 22, 1928

HEAVISIDE'S ELECTRICAL CIRCUIT THEORY—Louis Cohen—*McGraw-Hill* ($2.50). An excellent summary of that part of Heaviside's mathematical analysis which bears on the theory of the electrical circuit.

Electrical Engineering

Science News-Letter, December 22, 1928

ELECTRIC LINES AND NETS—A. E. Kennelly—*McGraw-Hill* ($5). A revised edition of the author's earlier "Artificial Electric Lines," now enlarged by the addition of much material by reason of the development in recent years of the theory of general alternating-current networks.

Electrical Engineering

Science News-Letter, December 22, 1928

INTRODUCTION TO THE MATHEMATICS OF STATISTICS—Robert Wilbur Burgess—*Houghton, Mifflin* ($2.50). A general but elementary outline of the best methods of statistical analysis, with an explanation and discussion of these methods.

Mathematics

Science News-Letter, December 22, 1928

EMERGENT EVOLUTION AND THE DEVELOPMENT OF SOCIETIES—William Morton Wheeler—*W. W. Norton and Co.* ($1). The author offers his theory of emergent evolution as a meeting ground for the advocates of materialism and spiritualism and particularly for those who cannot quite go the whole way into either camp. The book may help those whose philosophy has been upset by scientific developments.

Sociology

Science News-Letter, December 22, 1928

IN SEARCH OF OUR ANCESTORS—Mary E. Boyle—*Little, Brown* ($3.50). The novel method is used of starting with our comparatively recent Iron Age ancestors and working backward to Stone Age men and finally, briefly, to the geologic stages that set the scene for man's appearance. A great deal of information is presented regarding the famous discoveries of prehistoric men in Europe, and the illustrations are well selected to enable the reader to visualize the evidence. The preface by the Abbé Breuil philosophizes attractively on evolutionary vistas and the educational value of understanding the evolutionary principle.

Anthropology

Science News-Letter, December 22, 1928

APPLETON'S MODERN ATLAS—George Philip and W. R. McConnell—*Appleton* ($4). A complete and well-prepared atlas that will be a welcome addition to any home library, even though it is intended primarily, say the authors, for use in the classroom or by the student in lesson preparation.

Geography

Science News-Letter, December 22, 1928

FAMILY LIFE TODAY—Edited by Margaret E. Rich—*Houghton, Mifflin* ($2.50). This book is a collection of the "papers presented at a conference in celebration of the fifteenth anniversary of family social work in America." The contributors include Karl de Schweinitz, Herbert Jennings, William F. Ogburn, Ernest R. Groves, Dorothy Canfield Fisher, Mary E. Richmond, Mrs. John M. Glenn and other scientists, ministers and social workers who are authorities in the field. The book provides an interesting discussion of this modern problem. It should please both social workers and persons who are individually responsible for families and who have a realization of such responsibility.

Sociology

Science News-Letter, December 22, 1928

OUR SLUMBERING WORLD—Edmund Noble—*Holt* ($2.50). A journalist-philosopher sets out to awaken his readers to the significance of present-day happenings and viewpoints. Such matters as our standardized minds, poverty and wealth, and how we treat each other are discussed simply and effectively.

Philosophy

Science News-Letter, December 22, 1928

THE MASHONA—Charles Bullock—*Juta and Co., Ltd., Cape Town* (12s. 6d.). The author of this intensive study of a very unusual tribe in Southern Rhodesia is the "native commissioner and examiner in native customs and administration". His findings on the beliefs, fears, social customs, and historic background of these people are based on his personal observations, which, he says, do not always coincide with the "conclusions and theories of ethnographers of world-wide reputation." These authorities, he believes, have at times been led to draw conclusions from reports of inexact observers because the reports fitted in with preconceived ideas.

Ethnology

Science News-Letter, December 22, 1928

TAKING THE NAME OF SCIENCE IN VAIN—H. J. Bridges—*Macmillan* ($2.50). The author wages verbal war on those who, in his estimate, are corrupting the youth of the country by building dogmatic systems on premises uncertainly afforded by science. He has a special grudge for Watson, Darrow and Mencken.

Philosophy

Science News-Letter, December 22, 1928

TRAILS OF THE HUNTED—J. L. Clark—*Little, Brown* ($4). The ways of big game in Africa, Asia and America, by one who has known them long and at first hand. The book is excellently printed and beautifully illustrated.

Zoology

Science News-Letter, December 22, 1928

OUR GREAT OUTDOORS: MAMMALS—C. W. G. Eifrig—*Rand McNally* ($1.25). For the student of nature, whether in school or on his own, this book will be a very useful one. The author shows his animals as really alive.

Zoology

Science News-Letter, December 22, 1928

TRANSCENDENT EVOLUTION—O. F. Broman—*Stratford* ($2). This addition to the literature of "reconciliation" was written, the author states, originally for the benefit of his children, and is now given publication for the benefit of "those who have lost or may be in the process of losing, through the influence of modern agnostic tendencies . . . their belief in the religion of their fathers, and who may feel the need of some basic form of reasoning having a tendency to re-establish faith in Religion and in the Sacred Writings as contained in the Bible."

Evolution—Religion

Science News-Letter, December 22, 1928